NavMed 369

RESTRICTED

NAVY DEPARTMENT

BUMED NEWS LETTER

a digest of timely information

Editor - Captain F. W. Farrar. (MC). U.S.N.

Vol. 8 Friday, December 20, 1946 No. 13

Notice: Items marked "Restricted" should not be published or communicated to anyone except for official purposes.

TABLE OF CONTENTS

Circular Letters:

* * * * * *
* * * *

(Not Restricted)

Dysentery Carriers Following Dysentery Outbreaks: Since the fall of 1945 when many Naval vessels in Pacific waters were seeded with a sulfa-resistant strain of Shigella flexneri III, sporadic cases and epidemics of dysentery have recurred on a large number of such vessels.

Such recurrent outbreaks have often been called gastro-enteritis until stool or rectal swab cultures proved the presence of a dysentery organism, which in every case has been shown to be of the same flexner III type originally recovered.

A recent bacteriological study of a late recurrence of dysentery of this type aboard a cruiser gives a typical and illustrative picture of the epidemiological processes discovered in a large number of instances in the past year.

During October and November 1945, while in a harbor of Japan, the vessel experienced an outbreak of bacillary dysentery. Between 400 and 500 men of the crew were involved. Sporadic cases of diarrhea diagnosed as gastro-enteritis began to appear in mid-August 1946, and 25 cases in all were seen up to 30 September. On this date, the ship had been at anchor in Long Beach harbor approximately one week. Between 30 September and 3 October, 56 new cases were seen, and by 8 October the total number of cases had reached 105.

The epidemiological factors were not immediately apparent. Drinking water was obtained by water barge from the Long Beach city supply while at anchor. The ship's evaporators had not been used while the ship was in the inner harbor. On 10 September and 2 and 3 October samples of the water in use by the ship were negative for comtamination by colon bacilli.

Chlorination of the ship's drinking water was started 1 October as a precaution. The drinking water (as has usually been found) was not contaminated. The epidemic continued.

Harbor water had been used to wash down decks, but was not used in the galley, scullery, vegetable peeler, or showers. Its use on decks was stopped 1 October, but it may be noteworthy that bowel discharges of numerous dysentery cases had been pouring into this water during the preceding 24 hours. There was no evidence of cross connection between the salt and fresh water lines within the ship.

Rectal Cultures Made on 2 and 3 October.

Group	Number
(a) Patients from whom cultures were taken	58
(b) Non-ill food handlers from whom cultures were taken	74
(c) Non-ill men who were aboard during epidemic in Japan* from whom cultures were taken	21

Shigella Flexneri III Recovered

Group	Number Positive	% Positive
(a) Patients (58)	35	60.
(b) Food handlers without symptoms (74)	4	5.4
Food handlers with symptoms (16)	5	31.
Food handlers, ill and non-ill (90)	9	10.
(c) Personnel not ill but previously exposed in Japan (21)	3**	14.
Total personnel from whom cultures were taken (153)	42	27.

*Ten of these had been ill in Japan.

**The 3 positives in group (c) may have become infected during the current epidemic. The carrier state in these 3 cannot be said to date back to 1945.

Numerous cultures were taken from various stations in the ship. All were negative but one. This one culture, taken from the ice cream scoop container in the soda fountain, was positive for Shigella flexneri III. The soda fountain attendant had symptoms of bacillary dysentery and a rectal culture positive for dysentery bacilli.

Although much is yet to be learned of the infectivity of dysentery organisms, it appears that moderate numbers of certain strains will produce regularly a transient asymptomatic carrier state when ingested; however, large numbers must be swallowed if symptomatic illness is to result. In this connection, the conditions which favor food infection (inoculation of suitable food, incubation for several hours or more, serving without reheating) will increase both the number and the severity of dysentery cases in the food-handler carrier type of epidemic. In some food-borne outbreaks the incubation period of the disease may be from 12 to 24 hours, but when the incubation

period is as short as this, a number of cases will usually be so severe as to force the clinical diagnosis of dysentery.

A common experience following dysentery outbreaks has been, therefore, to observe sporadic cases of mild diarrhea at irregular intervals for some months, with explosive dysentery outbreaks occurring after the disease has been transmitted to a food handler. The experience here recounted and the above analysis lead to the following recommendations:

(1) When dysentery occurs in a Naval vessel or other activity, all food handlers, including those in galleys, mess halls, and at soda fountains, should be frequently examined and excluded from food handling whenever they are affected with diarrhea or any other symptoms suggestive of dysentery. This precaution should be most zealously observed for months after a dysentery outbreak, because the carrier state in dysentery may persist in a larger number of persons and for longer periods than in illness due to food infections caused by other bacilli. In food intoxications caused by cocci, there is virtually no enteric carrier state.

(2) Wherever possible during and after a dysentery outbreak, rectal swab cultures should be made on all food handlers and prospective food handlers, and all those persons showing positive cultures should be excluded from food handling until three negative cultures have been obtained. Culturing of rectal material should be continued until no further recoveries of Shigella are made. This culturing should be resumed early in a series of sporadic diarrhea cases. In the event that this is not practicable, a three-month period of exclusion from food handling is recommended for all men with symptoms of dysentery. The exclusion of symptomatic cases will eliminate many sources of dysentery, including most of the large-scale distributors of the causative organisms.

(3) Proper galley and soda fountain sanitation (especially the proper washing of hands), will break the cycle of transmission in most instances. Frequent indoctrination and constant alert supervision are necessary to obtain this ideal.

(4) Drinking water supplies of ships are almost never the source of diarrheal outbreaks, but the use of harbor water on or in the ship while dysenteric feces are being discharged over its side or those of nearby ships is obviously a dangerous procedure. Although water in the open sea is generally free of enteric contamination, this may not be safely assumed when ships are steaming in column. (Preventive Medicine Div., Bumed)

* * * * * *

(Not Restricted)

The Outlook for Influenza: In a recent paper the Commission on Acute Respiratory Diseases formulated a theory concerning the periodicity of influenza. It is based on published data concerning excess annual death rates from influenza and pneumonia since 1920 and on more precise information concerning the occurrence of epidemics of influenza A and B since 1932.

According to these workers, the sixteen widespread epidemics of influenza that occurred in the United States between 1920 and 1944 can be accounted for on the basis of two specific recurrent infections. Influenza A appears to have a cycle of from two or three years, and influenza B a cycle of from four to six years. They claim that no other influenza viruses have caused widespread epidemics in this country during the past twenty-five years. On the basis of this formulation, the probability of occurrence of future epidemics has been forecast within certain time limits, although exact predictions are not possible.

Specifically, the experience with the epidemics of presumed influenza B is limited because the cycle is longer than that with influenza A and only a small number of past observations are reliable. The theory offered by the commission called for a widespread epidemic before the summer of 1946. At the time when the paper was written, there had been numerous small outbreaks of this infection that might have represented a return of influenza B five years after the previous epidemic, and there was insufficient evidence to indicate that this disease had caused an epidemic in a true sense. Only slight increases in the gross admission rates for respiratory diseases had occurred in the whole United States Army in the continental United States, although small outbreaks of influenza B occurred in certain units. However, toward the end of 1945 an influenza epidemic occurred that was roughly comparable in extent to the epidemic of influenza A that occurred in December, 1943. For the country as a whole a rise in the occurrence of influenza began about the middle of November and reached a peak during the week ending December 22, with a definite falling off in the next two weeks. This epidemic, which involved nearly all geographic areas of the United States and also occurred in other countries, was definitely identified as being due to influenza B in all areas.

It was found that in the past twenty-seven years, seven of the eleven epidemics of presumed influenza A occurred at an interval of two years and that the remaining four had a three-year interval. On the basis of that experience, there was more than an even chance that influenza A would reappear during the winter of 1945-1946. If influenza failed to occur in that season, the probability that it would appear in the following winter was considered to be even greater.

(Not Restricted)

Influenza A was identified in isolated cases during and after the epidemic of influenza B that occurred last December. Small isolated outbreaks were recognized, but no definite epidemic of influenza A occurred. If the theory proposed by the commission is correct, the occurrence of an epidemic of influenza A during the coming fall and winter is almost a certainty. Since the recognized epidemics of influenza A and B in New England have occurred during December or January, an epidemic of influenza A may be expected during those months.

The etiology of the great pandemic of 1918 is not known. Predictions regarding the future occurrence of such a pandemic, if it was caused by an agent other than the virus of influenza A or B, cannot, therefore, be made at the present time.

Considerable information has been accumulated in recent years concerning preventive vaccines against influenza-virus infections, and the subject matter has been given considerable publicity both in the lay press and in the literature distributed by pharmaceutical firms. In deciding whether or not such a vaccine should be given to any individual or group, the known facts concerning the available vaccines, their efficacy, and the untoward effects to be expected should be taken into consideration.

The influenza vaccines now available are prepared from fertile hen's eggs. After a stated period of incubation the eggs are inoculated with living influenza virus, which is then allowed to grow in the eggs--usually for two days. The allantoic fluid from these embryonated eggs is then harvested, and the virus contained in this fluid is concentrated by one of a number of methods and subsequently inactivated either by formalin or by other means, and a preservative then added. The present vaccines usually contain about equal quantities of influenza A and B viruses, together with a certain amount of egg protein.

Influenza vaccines are now being marketed by several of the leading manufacturers of biologicals in this country. Their products are recommended for subcutaneous injection. The doses recommended are one injection of 1 c.c. for adults, and two injections of 0.5 c.c each, given a week apart, for children. For batches of vaccine that produce excessive local or systemic reactions, the dose recommended for children should be used in adults as well.

The optimum protection to be expected from this vaccine, which is achieved in about two weeks after the first injection, corresponds to the time of the maximum rise of antibody. Little if any protection may be expected within the first week after vaccination. The protection lasts at least three or four months and probably as long as a year or more. Its efficacy in protecting against both influenza A and B has already been fairly well established.

(Not Restricted)

The first opportunity to prove the effectiveness of these vaccines in the prevention of influenza B occurred last year. The reports indicate that influenza B was about ten times as frequent in unvaccinated persons as in those who were protected by the vaccine given in the manner suggested. The results in influenza A as observed during the epidemic of 1943-1944 were not quite as good but point to a considerable degree of protection from the vaccine. Generally speaking, the incidence of influenza in unvaccinated persons was from two to six times (averaging about three times) that in vaccinated persons of comparable groups. The observations at that time were not all done under the most favorable conditions, and some were undertaken within too brief a period before the peak of the epidemic. Better results can probably be expected with the vaccines presently available if they are used under more favorable conditions and at a sufficient interval prior to the expected occurrence of an epidemic.

Reactions to the vaccine are of two types. One is related to sensitivity to egg protein and may be anything from mild urticaria to severe anaphylactic shock. The sensitization of persons so they will later develop allergic reactions from the injection of vaccine containing egg protein or from the ingestion of egg protein is a possibility, although sensitization of the latter type is probably rare. The second type of reaction is one related to the virus content of the vaccine. Symptoms simulating those of influenza may occur but are usually mild, of short duration and not incapacitating. They attest the efficacy of the virus and, when they occur, offer the best evidence that protection will be afforded. These reactions vary considerably with different batches of vaccine and are more frequent when the full dose is given in a single injection.

It should be borne in mind that the common cold and its complications are not prevented by the use of influenza vaccines, nor is protection afforded against bacterial infections such as streptococcal sore throat or against infections caused by viruses other than those of influenza.

In general, vaccination against influenza, if undertaken, should be done in the New England area during November or immediately on the first occurrence of typical cases of this disease. In the latter event, less protection may be afforded, and those already exposed or who come in contact with the infection soon after inoculation may obtain no protection. In allergic persons skin tests with diluted vaccine may be employed to test for sensitivity if vaccination is contemplated. Case histories should be obtained concerning sensitivity to egg protein and also concerning previous vaccination with materials that might contain egg protein. Vaccines against influenza, yellow fever, and typhus fever were widely employed, particularly the last, among the armed forces that operated in North Africa and in the Mediterranean Theater, and all of them contained egg protein.

(Not Restricted)

Vaccination is desirable in persons who have previously had severe experiences with influenza and its complications. It may also be recommended for those who, for a long time after attacks of influenza, are prone to have recurrent attacks of upper or lower respiratory-tract infections that persist. Large-scale immunization against influenza is recommended among groups in which it is important to minimize the occurrence of absenteeism during the period when epidemic influenza is likely to occur. In department stores, for example, the largest volume of business is transacted in the season when influenza epidemics usually occur. Certain industries that are geared to maximum production during a potential influenza season might also be hard hit by an epidemic of influenza. In colleges and technical schools, the occurrence of influenza might put the programs entirely out of gear. Under such conditions, large-scale vaccination may be highly desirable. However, care should be taken to avoid the inclusion of persons in whom reactions might prove serious. (New England J. Med., 31 Oct. '46 - editorial)

* * * * * *

(Not Restricted)

Lobectomy and Pneumonectomy in the Treatment of Pulmonary Tuberculosis: Sufficient experience has been accumulated in the past five or six years to make it possible to predict the place that lobectomy and pneumonectomy are likely to have in the surgical treatment of pulmonary tuberculosis. That it would never be possible to excise all of the tuberculous disease in any patient has been obvious from the beginning. Most surgeons have been surprised by the fact that the disease is frequently found to be more extensive when the chest is opened than the x-ray had led them to believe. Lobectomy or pneumonectomy is not a substitute for any of the forms of collapse therapy, and when one of these procedures is likely to prove effective, it should be employed in preference to excision. On the other hand, it must be recognized that there are lesions that are unlikely to be controlled by any of the older methods. To state that thoracoplasty is effective in 90 per cent of cases and carries a low mortality is not an argument against lobectomy or pneumonectomy. The results of the more radical forms of treatment should be compared with those in cases in which thoracoplasty has proved unsatisfactory.

Patients with well marked bronchial stenosis, particularly if repeated febrile attacks occur or if the sputum continues positive in the involved area, should be submitted to lobectomy or pneumonectomy provided the disease in the remainder of the lung is healed or sufficiently quiescent. The operation should not be undertaken if it will necessitate the division of the bronchus through a site of active disease. Areas of tuberculous bronchiectasis which constitute a source of positive sputum should be excised. Hemorrhage from such areas in the lower or middle lobes and

usually in the upper lobes should be considered an indication for excision, although in the upper lobes thoracoplasty may be the procedure of choice. Atelectatic lobes or portions of lobes which remain the only source of tubercle bacilli should be removed since no other treatment is effective. Cavities which remain open in the presence of what should be an effective pneumothorax ought to be treated by lobectomy if the condition of the remainder of the lung will permit it. In the case of upper lobe cavities of this type it is sometimes wise to do a preliminary thoracoplasty with the consideration that should the sputum remain positive it may be necessary to do a secondary lobectomy. Lobectomy is also indicated in tuberculosis confined to a lower or middle lobe when, because of adhesions, the disease is not controlled by pneumothorax or phreniclasia. Solitary large tuberculomas should, as a rule, be removed. Such lesions, whether or not collapse therapy has been employed, are prone to undergo necrosis sooner or later, and not infrequently cause dissemination of the disease. That dissemination occurs occasionally in spite of lobectomy is not a valid argument against the procedure, since it will almost certainly happen much less frequently with lobectomy than with any other form of treatment. Massive tuberculous disease in one lung when the lung on the other side is in good condition may occasionally be an indication for pneumonectomy, but this is a doubtful indication and the percentage of satisfactory results is likely to be disappointing.

The long term results of these procedures, as in other forms of surgical treatment, are certain to be influenced by the postoperative management. Prolonged rest is indicated in all cases, particularly if there has been evidence of activation of apparently quiescent lesions. Although activity may be permitted fairly early following excision of certain unusually localized foci of disease, the management in general should be much the same as though the patient had had a thoracoplasty. Many patients continue to have positive cultures from sputum or gastric lavage for some months following operation. In many such patients the source of the positive sputum is not apparent.

Lobectomy and pneumonectomy undoubtedly have a place, although a limited one, in the surgical management of tuberculosis. Too much enthusiasm unquestionably has resulted in the employment of these procedures in unsuitable cases. Fortunately, the results are most satisfactory in those cases in which the indication is most obvious. Lobectomy and pneumonectomy represent additions to the many forms of surgical care of tuberculosis, but time and experience alone will determine the lesions for which they are most suitable. (Surg., Gynec. & Obst. - editorial - Janes).

* * * * * *

(Not Restricted)

Immunity in Experimentally Induced Infectious Hepatitis: In previous communications from the Section of Preventive Medicine of the Yale University School of Medicine and other laboratories a distinction has been made between infectious hepatitis and homologous serum jaundice. Certain similarities and differences between these two conditions have been defined on the basis of clinical and epidemiologic data as well as experiments in the transmission of virus to human volunteers. The exact relationship between these two conditions is not clearly understood. It is not yet known whether the apparent differences noted between them are representative of actually different viruses or of antigenic differences of various strains of a single virus.

The immunologic relationships between homologous serum jaundice and infectious hepatitis are also not clear. Both conditions probably belong to the same general group. Planned experiments on human volunteers have demonstrated that subjects convalescent from both serum jaundice, and infectious hepatitis are apparently immune when reinoculated several months later with an homologous strain. Neefe, Stokes, and Gellis have recently summarized the epidemiological data which suggest that one attack of infectious hepatitis is followed by some degree of immunity. Moreover, the demonstration of the protective effect of normal human gamma globulin when administered during the short incubation period of epidemic infectious hepatitis also suggests the presence of certain neutralizing substances in the blood of the normal adult population, possibly as a result of a previous clinical or subclinical attack of the disease. Attempts to demonstrate a similar protective effect of normal human gamma globulin when administered during the long incubation period of homologous serum jaundice have shown conflicting results. In one study a significant prophylactic effect was observed when two injections of 10 c.c. of gamma globulin were given a month apart, but in two other studies no benefit was found when a single injection of 10 c.c. was given. The reasons for this discrepancy are not clear, but it is possible that the size of the dose of gamma globulin, the long period of viremia in homologous serum jaundice, and the fact that viremia may be already established prior to the administration of gamma globulin may be important factors.

During the past two years, in the course of experiments in the transmission of infectious hepatitis to human volunteers conducted by the U. S. Army Neurotropic Virus Commission, it has been possible to test the immunity of some of the convalescent subjects.

In this study nine human volunteers, convalescent from infectious hepatitis experimentally induced by a strain of virus employed in the Yale laboratory, were resistant when reinoculated with the same strain of virus from 6 to 9 months later. The convalescent subjects remained asymptomatic throughout the period of observation and their various tests of liver

(Not Restricted)

function were all within normal limits with the exception of 4 men who developed positive cephalin-cholesterol flocculation for several weeks during the period of observation. It is difficult to interpret the significance of these positive cephalin-cholesterol flocculations. They may represent evidence of minimal disturbance of hepatocellular function. Similar borderline disturbance of function was reported by Neefe, Stokes, and Gellis in testing for immunity in patients convalescent from homologous serum jaundice.

Eight out of 12 previously healthy control subjects developed infectious hepatitis with jaundice following administration of this same material.

The demonstration of homologous immunity produced by this strain of virus is in agreement with the demonstration by others of homologous immunity produced by another strain of infectious hepatitis virus. (J. Exper. Med., Nov. 1, '46 - Havens)

* * * * * *

(Not Restricted)

The Use of Pyridoxine Hydrochloride in Irradiation Sickness: Following the publication of Maxfield's results in the treatment of irradiation sickness by pyridoxine hydrochloride (vitamin B_6) in 1943, the author became interested in this drug and subsequently began its use in irradiation sickness at The Henry Ford Hospital. In order to give the drug a thorough trial, it was decided to limit its use to the more severe cases and not to use it prophylactically. With this in view, the cases of irradiation sickness were classified arbitrarily into four groups: (1) mild (anorexia and some nausea); (2) moderate (rather severe nausea, distaste for food, and occasional vomiting); (3) severe (pronounced nausea and frequent vomiting); and (4) late or inflammatory symptoms due to proctitis, enteritis, and cystitis.

No medication was offered to patients falling in the first group. Those in the other three groups received intravenous injections of from 25 to 50 mg. of pyridoxine hydrochloride, in the form of Hexabetalin, beginning with the onset of symptoms. No other medication was given to any patient either prophylactically or otherwise unless specifically indicated. The injections were made at intervals varying from one to four days according to therapeutic response.

The results were arbitrarily classified as: (1) excellent (complete relief of all symptoms); (2) good (relief of all vomiting and most of the nausea); and (3) poor (no appreciable abatement of symptoms).

Since inauguration of the use of pyridoxine hydrochloride, 81 patients have received this drug. Doses varying from fractional to skin tolerance were used in most cases.

(Not Restricted)

Among the 81 cases studied, excellent results were obtain in 44 (54 per cent), and good results in 28 (35 per cent). In 9 cases (11 per cent) vomiting was not entirely relieved and a troublesome degree of nausea remained. Some of the last group had a noticeable relief of symptoms, and others none at all. In general, there was no relief of diarrhea, tenesmus, and urinary frequency, but in many cases nausea and vomiting were diminished. Tincture of opium in a suitable vehicle gave the greatest relief to the Group 4 cases.

Recent literature has added to the possible physiological causes of irradiation sickness. Bean, Spies, and Vilter gave x-ray therapy to patients who had a definite vitamin deficiency and who were suffering from various stages of pellagra or peripheral neuritis. They found a known, although rough, correlation between the severity of irradiation sickness and the degree of vitamin deficiency. They were also able to show that correction of the vitamin deficiency prior to x-ray therapy was much more efficient in obviating irradiation sickness than administration of vitamin B after irradiation was begun. They suggest that the basic disorder in irradiation sickness is a disturbance in respiratory enzyme systems.

Jenkinson and Brown have likened the findings to those of shock. They have graphically illustrated the effect of x-rays on the capillary beds, with resultant anoxemia of cells, local capillary dilatation, and finally, loss of plasma into the tissues. They also point out that irradiation sickness is most likely to follow irradiation of those parts of the body possessing the largest capillary beds and, to combat it, they recommend administration of a vasoconstrictor such as benzedrine sulfate. The results obtained with this and a similar drug were encouraging.

More recently, Ellinger has called attention to the close correlation between the threshold dose of x-rays producing liver injury in the laboratory animal and sensitivity to histamine. He points out the close similarity of liver damage due to x-rays and that produced by injections of histamine, the histologic appearance of the liver cells in both being identical. An increase in bile secretion was also observed both after irradiation and histamine administration. Ellinger believes that he has proved experimentally that histamine is liberated in the tissues irradiated by x-ray and that it is to this histamine effect on the capillaries and liver that irradiation sickness is attributable. If this theory is correct, it may well be possible to prove a direct relationship between histamine sensitivity in man and the unexplained occurrence of severe irradiation sickness. The author feels that there is need for further experimentation in order to determine the mode of action of pyridoxine hydrochloride in the relief of irradiation sickness.

(Not Restricted)

As a result of their experience in the use of pyridoxine hydrochloride in irradiation sickness, the author and co-workers believe that it is a reliable and harmless method of relieving that condition. (Radiol., Oct. '46 - van Haltern)

* * * * * *

(Not Restricted)

Study in Animals on Irradiation Sickness: Rats were chosen for this study on irradiation sickness because they closely resemble human beings in many nutritional and metabolic characteristics and because adequately controlled experiments are possible with their use.

Over a period of eighteen months, 824 Sprague-Dawley albino weanling rats were used in twenty experiments, usually in groups of fifty-two. The experiments were begun when the rats were from 26 to 29 days old, and were continued until the rats were from 54 to 95 days old. The rats were housed in individual cages, and daily individual weight records were kept. All rats were provided with various diets prescribed to establish different nutritional levels.

The test rats were given a single massive dose of irradiation, varying from 600 roentgens to 800 roentgens in the different experiments. Adequate control groups which were not exposed to roentgen radiation were used to parallel fully the test conditions in each experiment.

Criteria for the incidence and severity of irradiation sickness in the rats following exposure to a single massive dose of roentgen rays were: (1) percentage fatality, (2) weight changes, (3) observations on activity and food consumption, and (4) autopsy findings. The roentgen-ray dosage was determined to give approximately 50 per cent fatality under each set of experimental conditions.

The findings establish the fact that young rats on a vitamin-free diet showed marked increased susceptibility to fatal irradiation sickness when compared with rats maintained on an adequate diet. It is of considerable importance that the daily oral vitamin supplements of thiamine, pyridoxine, inositol, riboflavin, nicotinamide, calcium pantothenate, and choline hydrochloride, administered three days before the roentgen-ray exposure and continued thereafter until the termination of the experiment, greatly decreased the incidence of fatal irradiation sickness in rats otherwise maintained on a vitamin-free diet.

These observations on 824 rats under control conditions support the clinical observations in the Nutrition Clinic in Birmingham, Ala., that persons with nutritive failure have increased susceptibility to irradiation sickness. Until the basic mechanisms of irradiation sickness are fully

(Not Restricted)

understood, treatment for its prevention and alleviation will necessarily remain on a nonspecific and symptomatic basis. (Am. J. Roentgenol., Nov. '46 - Johnson et al.)

* * * * * *

(Not Restricted)

Subcutaneous vs. Intramuscular Administration of Penicillin: For the parenteral administration of penicillin, the intramuscular route has been recommended as the most practical when intermittent injections are given. Intravenous injections, although not so painful, are less desirable because they do not produce a sufficiently sustained plasma concentration of penicillin. On the other hand, subcutaneous injections, which should give (at least theoretically) more sustained plasma levels than either intramuscular or intravenous injections, have been viewed with disfavor because of the irritation they produced. Accordingly, the most recent directive of the War Production Board has stated that the subcutaneous route should be avoided.

These recommendations have been based on the properties of the penicillin commercially available at the time. That the degree of purity of the penicillin is the important factor in determining the intensity and duration of the pain produced by the injections has been shown by Herwick and coworkers. Now that pure or almost pure preparations of penicillin have been made available for clinical use, the question of the most desirable route for parenteral administration should be re-examined. The results of such an investigation are summarized in this report.

Methods: The following penicillin preparations were used for this study:

1. An almost pure amorphous sodium penicillin (1,550 units per milligram) put up in 200,000 unit vials. This will be spoken of as high potency sodium penicillin (amorphous).

2. Crystalline sodium penicillin (1,400 units per milligram) in 200,000 unit vials.

3. Pure crystalline potassium penicillin (1,631 units per milligram) in 100,000 unit vials. (An earlier amorphous preparation used in a few instances contained 1,501 units per milligram.)

The penicillin was dissolved in sterile physiologic saline solution in a concentration of 10,000 units per cubic centimeter. When injected intramuscularly, the triceps or deltoid muscle was utilized, a 1 1/2 inch, 22-gauge needle being employed. For subcutaneous injections, the upper arms or thighs were chosen, and the regular 1/2 inch, 26-gauge hypodermic needles were employed.

(Not Restricted)

The penicillin preparations were injected subcutaneously or intramuscularly in doses of 10,000, 15,000, or 20,000 units into hospital control subjects who were young or middle-aged patients, not acutely ill, and who had no demonstrable circulatory or renal disturbances. Plasma penicillin concentrations were determined at one-half, two and one-half, and three hours after the injections by the serial dilution Bacillus subtilis method of Randall, Price, and Welch, as modified by Hickey. In the majority of injections of penicillin, comparisons of the subcutaneous and intramuscular routes were made in the same patient; however, since there was a great degree of variability of the plasma levels achieved with any penicillin injection even in the same patient by the same route, the results have been evaluated by the determination of the average of plasma values for any type of injection.

In order to determine whether human blood, even in the absence of penicillin, has inhibitors for growth of B. subtilis, as has been alleged, control blood samples in 40 instances were taken for penicillin estimation before penicillin was administered. In addition, blood specimens from eighty hospital patients not on penicillin or sulfonamide therapy were analyzed for penicillin. In the total of these 120 control plasma specimens, only one showed a level equivalent to 0.03 unit; the remainder gave 0 levels. These findings, supplemented by the many 0 levels in the hundreds of assays made during these and other studies, have convinced the author and co-workers that, at least with their use of this method of assay and possibly because of the employment of citrated plasma, there is little danger of finding positive penicillin levels in plasma specimens that do not contain penicillin.

Summary. There was no after-pain with either type of injection. Subcutaneous injections, because they permitted the use of a small needle, were less annoying than those given intramuscularly.

There were no essential differences between the plasma penicillin levels obtained after subcutaneous injections and those following intramuscular administration. All three purified preparations, the amorphous and the crystalline sodium penicillin and the crystalline potassium penicillin, gave essentially the same results.

There were no instances of urticaria or other forms of sensitivity.

The subcutaneous route has been found from these studies to be the one of choice for the parenteral administration of purified penicillin preparations. (J. Lab. & Clin. Med., Nov. '46 - Hoffman)

* * * * * *

Abstracts of Reports on Research Projects:

X-222
Report No. 7
31 Aug '46

Studies in Tsutsugamushi Diseases (Scrub Typhus) VI. A Mouse Protection Test for Tsutsugamushi Disease.

Various serological and animal tests are already available for studying the immune response of individuals to infection with Rickettsia orientalis. The first of these to be developed, the Weil-Felix reaction employing the strain of Proteus has been shown to be at times unreliable. More recently, antigens prepared by several methods have been shown to fix complement specifically in the presence of scrub typhus immune sera. Wolfe, Topping, and Bengtson have independently reported such antigens and Bengtson has found it possible by the use of her preparation to distinguish antigenic differences between strains of R. orientalis. Animal tests have been used to demonstrate cross immunity.

It seemed worthwhile to supplement the available methods for the detection of the extent of antibody response by designing a neutralization test which would measure quantitatively the degree of production of protective antibodies.

In the hope that such a neutralization test would be sufficiently sensitive to describe the antibody pattern following the human infection, particular attention was directed toward designing a test that would be economical in the use of sera. It was consequently thought necessary also to study those factors influencing the infectivity titre, namely, the volume of inoculum, the route of inoculation, the diluent, and the effect on the Rickettsiae of incubation at room temperature.

The mouse protection test consisted of intraperitoneal inoculations in doses of 0.05 c.c. of mixtures of equal volumes of undiluted serum and falling ten-fold dilutions of R. orientalis suspended in five per cent skimmed milk. Four mice were inoculated with each dilution.

The homologous hyperimmune rabbit sera used gave neutralization indices ranging from 2.3 to 3.2 log units. These values could not be changed by preliminary cycles of rapid alternate freezing and thawing of the infected yolk sac suspension.

(Not Restricted)

Abstracts of Reports on Research Projects (Cont.):

X-222 (Cont.) The usefulness of this test would seem to be limited to sera possessing fairly high levels of protective antibodies. Further work is necessary to demonstrate the specificity of the test and to extend its usefulness as an epidemiological tool by attempting to increase its sensitivity. (Nav. Med. Res. Inst., NNMC, Bethesda, Md. - Vinson)

(Restricted)

NMRI-167 23 Oct. '46 Mosquito Control at Naval Petroleum Reserve No. 4.

Naval Petroleum Reserve No. 4 occupies a large area of northern Alaska north of the Arctic Circle. In this territory the spring thaw is accompanied by a sudden emergence of swarms of mosquitoes and other biting insects which persist until the first freeze early in September. Since there are 18 to 24 hours of daylight daily during this brief season, heavy work schedules are planned for the men in the field parties and at the camps. Protection from the ever-present clouds of mosquitoes is needed in order to provide more satisfactory working conditions.

Three goals were set for the 1946 season: (a) to plan and develop a mosquito control program; (b) to run field tests on the insect repellent NMRI-448; and (c) to collect data on the bionomics of Arctic mosquitoes which could be used in planning a more efficient control program for 1947.

At Umiat camp, where there was the worst mosquito problem, sprayings with DDT solution using an exhaust aerosol generator were carried out between 19 July and 2 August 1946. Following the first spraying the mosquito density in the treated area was markedly reduced. The mosquito biting rate decreased from over 30 per minute to zero within two hours. Meanwhile, the biting rate 400 yards northwest of camp remained at the pretreatment level. During the evening the wind continued from the northeast and the next morning the mosquito population in camp was nearly as great as it was before the initial spraying. Therefore, the camp area was sprayed again. During seven of the next nine days, the wind was from

(Restricted)

Abstracts of Reports on Research Projects (Cont.):

NMRI-167 (Cont.)

the southwest and the camp remained free of mosquitoes, but on the other two days it shifted back to the northwest and mosquitoes were borne into camp from the adjacent untreated areas. Aerial spraying, covering a much larger area, virtually eliminated the mosquitoes on the island. However, surveyors working a quarter of a mile outside of the sprayed area reported undiminished numbers of biting mosquitoes.

The problem of a control program for 1947 in the absence of complete data on the mosquitoes is difficult. However, assuming that the program will be conducted, suggestions for this program have been made on the basis of the incomplete data on hand. The suggestions include the testing of the repellents NMRI-448 and 6-12 provided in 1946. (Nav. Med. Res. Inst., NNMC, Bethesda, Md. - Jachowski, Jr.)

Note: Those interested in seeing copies of the complete reports should address their request to the Research Division, BuMed.

Opinions or conclusions contained in these reports are those of the authors. They are not to be construed as necessarily reflecting the views or the endorsement of the Navy Department. Reference may be made to those reports marked "Not Restricted" in the same way as to published articles noting authors, title, source, date, project number, and report number. No part of the content of RESTRICTED reports may be published, reproduced, or referred to in articles for publication without permission obtained through the Bureau of Medicine and Surgery.

* * * * * *

(Not Restricted)

Late Acceptances of Appointments for Transfers to USN: See Alnav 617 on page 27.

* * * * * *

(Not Restricted)

Basic Standards of Hospital Dental Service Required of Approved Hospitals: The Committee on Hospital Dental Service of the American Dental Association and the Council on Professional Practice of the American Hospital Association announce that a set of basic standards for hospital dental service has been established for the first time. Although the phraseology as written is for civilian hospitals, it applies as well to naval hospitals in principle and practical procedure. It is believed that many naval hospitals already meet these standards and that others can meet them after making minor changes. Medical Officers in Command of Naval Hospitals are encouraged to institute the necessary procedures for meeting the basic standards and to apply for a certificate of approval for the Department of Dentistry.

BASIC STANDARDS OF HOSPITAL DENTAL SERVICE
REQUIRED OF APPROVED HOSPITALS
BY
COMMITTEE ON HOSPITAL DENTAL SERVICE
OF THE
AMERICAN DENTAL ASSOCIATION

I. GENERAL CONSIDERATIONS

Dentistry is an important health service. Since dental care is a necessary part of the treatment of many medical and surgical conditions for hospitalized patients, cooperation between medicine and dentistry is imperative in modern hospital organizations.

In addition to this coordination of dental service with other services, there are patients who are admitted primarily for the treatment of oral conditions, such as the repair of traumatic injuries about the jaws and surgical eradication of oral infections of dental origin. These patients should have the benefit of an efficient dental service.

Experiments with different plans of procedure and organization during the early stages of development have met with varying degrees of success. It is now evident that standardization is necessary.

II. BASIC REQUIREMENTS FOR THE DEPARTMENT OF DENTISTRY

1. Hospital Department. The title of the department responsible for the hospital dental service should be "Department of Dentistry" or some similar title consistent with those used for divisions of services within the given hospital.

2. Hospital Rules. The Department of Dentistry should be organized under the direction of a dentist to function as other specialties. The rules of the hospital should be amended, where appropriate, to include the word dentist. Any other revisions to encourage and permit proper functioning of the Department of Dentistry should be made. The rules of the Medical Board should be revised where necessary to accelerate interdependent procedures.

3. Dental Staff.

a. All dentists privileged to practice in the hospital should be organized as a definite group or staff. Membership upon the dental staff should be restricted to dentists who are:

(1) Graduates of schools approved or tentatively approved at the time of graduation, by the Council on Dental Education

(2) Members of the American Dental Association or the National Dental Association

(3) Worthy in character and in matters of professional ethics as set forth in the Code of Ethics of the American Dental Association.

When special work in oral surgery, periodontics, orthodontics, or other specialties of dentistry is to be undertaken, the dentist should be qualified by training or experience.

b. Every dentist admitted to practice in the hospital should qualify for membership on the hospital staff in accordance with customary procedure. When accepted for appointment to the hospital staff, he should be assigned to the appropriate rank on the dental staff.

c. The number of appointments and grades in rank will depend on the size and type of the hospital. The classification of appointments according to rank will be dependent upon the standard nomenclature and custom in other departments of the given hospital. Promotion in rank should be consistent with the ability, interest and aptitude of the individual and the custom of the hospital.

d. Appointments: Dentists who are being considered for appointment to dental staffs should have qualifications such as previous hospital experience, technical ability and scientific training that would be expected of any other staff member. Opportunity should be afforded for acquiring experience under supervision of qualified staff members.

4. Dental House Staff. Whenever possible, hospitals operating a Department of Dentistry, should provide for dental interns and residents appointed according to the usual regulations of the hospital. Dental internships and residencies should conform to "Requirements for Approval of Dental Internships and Residencies", established by the Council on Dental Education of the American Dental Association, and should be consistent with internships and residencies in other departments of the hospital.

5. Functions. The Department of Dentistry has three main functions:

a. Administrative: To act in an advisory capacity through customary channels on problems related to the dental services.

b. Clinical: To render professional service to the patients in accordance with the precepts of modern scientific dentistry, to maintain its own efficiency and periodically to audit the professional work.

c. Educational: To help train staff members, dental residents and interns, dental hygienists, dental assistants, and nurses in order that their knowledge and field usefulness will be increased.

6. Organization.

a. Direction: The dental department should be under the direction of a dentist designated by title as are other service chiefs. The chief of the dental department should be selected for his professional and executive ability on the same basis as other departmental chiefs. The chief of the Department of Dentistry should have the same privileges regarding appointment to the Medical Board or Executive Committee of the hospital as have other department chiefs.

b. Sections: In hospitals where large departmental staffs are required, the Department of Dentistry may be subdivided into sections:

(1) Oral Surgery
(2) Dental Roentgenology
(3) Restorative Dentistry (which includes operative and prosthetic dentistry)
(4) Dental Medicine (which includes periodontics and endodontics)
(5) Dentistry for Children (which includes pedodontics and orthodontics)

Division into sections fixes responsibilities more definitely, stimulates scientific interest in the dental specialties and promotes the proper administration of the professional services. Every department of dentistry should give special consideration to the differentiation of the dental staff into the various specialties in so far as such classification is practical. Establishing sections of the dental staff does not mean that every staff member should be a specialist in order to be assigned to a particular section.

c. Meetings and Seminars: The dental department personnel should attend and participate in general staff conferences. They should hold regular departmental meetings for thorough review and analysis of their clinical activities.

d. Education: Special effort should be directed toward adequate training of the interns and residents. Opportunity should be afforded for their training in general anesthesiology, physical diagnosis and other phases of the healing arts related and applicable to dentistry. Departmental ward rounds are essential to the educational plan and should be regularly scheduled. Opportunity should be provided for systematic specialized training of the dental department personnel. When facilities permit, the Dental Department should engage in the teaching of graduate students who desire to prepare themselves for the practice of one of the specialties of dentistry. The dental department should aid in nurses' training.

e. Research: Clinical investigations should be encouraged in the dental field. The hospital should make every effort to supply time, assistance and material for original investigations.

7. Dental Hygienists. Whenever possible, dental hygienists should be appointed to the Department of Dentistry.

8. Physical Equipment. The space allotted to, and the equipment, instruments and supplies of the Department of Dentistry should be adequate for such services as may be carried out by the dental department in accordance with generally accepted standards of practice. The physical equipment should be utilized full time and the dental personnel should be adequate to maintain this standard.

An adequate number of beds should be assigned to the dental department in hospitals where such procedure is customary for other departments.

9. Rules. The Department of Dentistry should function with a systematic plan of management based upon rules set up by the hospital for other services within the hospital.

10. Records. Dental records should be a part of the hospital record system. A uniform method should be established for recording data. Special clinical records may be used as an aid to clinical research.

11. Library. An adequate selection of dental books and periodicals should be available in the hospital library.

12. Formulary. A standardized departmental formulary, based upon "Accepted Dental Remedies" of the American Dental Association, should be adopted and included in the general formulary of the hospital.

III. MINIMUM DENTAL SERVICE FOR HOSPITAL PATIENTS

The hospitals should rapidly evolve a Department of Dentistry with adequate facilities to assume the responsibilities for a more complete dental service for patients on the wards and in the out-patient clinic. In order to extend dental care in that direction as rapidly as economic and manpower resources will permit, the following general plan is suggested:

The extent of the dental service provided by the Department of Dentistry will vary in accordance with (a) the size of the hospital, (b) the type of the hospital, (c) the type of service rendered by the hospital. For example, in hospitals for tuberculosis, mental diseases, and crippled children a more complete dental service is necessary.

It is recognized that an ideal program would include a complete oral examination including a complete dental roentgenographic interpretation as a routine for hospitalized patients. Out-patients should be afforded the same service when facilities permit. However, with the present limitations of personnel and general development of dental departments, it would seem desirable to postpone such a requirement as a minimum standard. Vitality tests, transilluminations, bacteriologic, pathologic, and other laboratory tests should be used where indicated. Dental consultation should be made available by the Department of Dentistry to the several other departments in the hospital.

The oral conditions should be recorded on a special form with appropriate recommendations for treatment. This form should become a part of the official hospital record of the patient.

A careful study of fundamental problems forces the conclusion that in order to set up minimum standards for a Department of Dentistry under hospital auspices the sections listed below should be responsible for the services as follows:

1. Oral Surgery. The work of the section of oral surgery in relation to the hospital out-patients and in-patients lies in diagnosis and surgical treatment. Treatment should consist of surgical eradication of acute and chronic oral infections. Experience in many hospitals has indicated that it is both feasible and desirable for the patients' welfare that the oral surgical service should care for diseases and injuries of the teeth and jaws amenable to oral surgery.

Transfer or assignment of such services to the section on oral surgery to care for those conditions is required and will, of course, be with the consent of the Medical Board.

2. Dental Roentgenology. The members of this section will, if they do not take the dental roentgenograms, at least be the consultants to the roentgenographic department for cooperative diagnosis of all dental roentgenograms.

3. Restorative Dentistry. In certain types of hospitals, especially those serving patients suffering from chronic diseases, such as tuberculosis, mental diseases, restorative dentistry is a necessary service.

Carious lesions of the teeth should be treated in the early stages by properly preparing the teeth and by using an appropriate type of filling material to restore the teeth to usefulness and to prevent pain and infection from this source.

Complete and partial artificial denture service should be available for patients with extended hospitalization.

This department should be responsible for the construction of splints for fractured jaw cases and radium for malignant cases.

4. Dental Medicine. Patients with acute and chronic infections of the investing soft tissues of the maxilla and mandible are to be treated by or under the direction of the periodontist. In instances where oral lesions are primarily of systemic origin, the dental department should work in cooperation with the appropriate medical department.

5. Dentistry for Children. In certain types of hospitals where children are hospitalized for an extended period of time, i.e., those serving crippled children and children with chronic diseases, the practice of pedodontics and orthodontics is a necessary service.

Orthodontic service should be available to children's hospitals for consultation and treatment. Cleft palate cases especially need this service.

(Not Restricted)

IV. RELATION TO THE SCHOOL OF NURSING

The Department of Dentistry should assist existing schools of nursing to prepare all nurses for participation in the oral health care program. When allocation of the clinical content of the nursing educational program is made to the different clinical departments, those conditions related to dental service should be allotted to the dental department. The chief of the Department of Dentistry with the educational director of nursing should assign the material to be taught by the appropriate members of his department. The role of the nurse in health teaching, in prevention of disease, as they relate to dentistry, should be defined by the dental and nursing departments.

Student nurses should be assigned to care for patients on the dental service of the hospital, and to assist in the dental clinic on the same basis as in other departments.

APPLICATION FOR APPROVAL

A certificate of approval for a Department of Dentistry in a hospital is granted by the Committee on Hospital Dental Service of the American Dental Association to those hospitals meeting these standards.

Application blanks may be obtained by writing to the Secretary of the Committee, J. Frank Hall, D.D.S., Indiana University School of Dentistry, Indianapolis 2, Indiana.

The hospital will then be visited by a member of the Committee or one of its consultants to confer with the hospital staff.

American Hospital Association Approves Dental Standards. The "Basic Standards of Hospital Dental Service Required of Approved Hospitals" has been approved as a recommendation for the Department of Dentistry in all hospitals by the following committees of the American Hospital Association: The Council on Professional Practice, The Coordinating Committee, and the Board of Trustees of the American Hospital Association. (BuMed, Ross T. McIntire)

* * * * * *

(Not Restricted)

Study to be Made of Dental Problems Incident to Cold Weather: Information contained in the reports of past Antarctic expeditions discloses the fact that dental pain was one of the most serious problems encountered in cold weather. For the purpose of coordinating a study of the dental problems which are expected to arise in the forthcoming Navy Expedition to the Antarctic on Operation "HIGHJUMP," a dental officer has been assigned to the Staff of the Commander Task Force Sixty-Eight.

(Not Restricted)

It is requested that any dental officer (including inactive Reserve) acquainted with dental problems encountered in subzero weather forward such information as he may deem pertinent regarding this matter to:

The Staff Dental Officer
Commander Task Force 68
FPO New York, New York

Full acknowledgement will be accorded each person forwarding information to assist in this study. (Dental Div., BuMed)

* * * * * *

(Not Restricted)

U. S. Army Photoduplication Service: The U. S. Army Medical Library, Washington, D.C., announces the following price scale for photoduplication service, effective 1 January 1947:

Microfilm: Periodical articles--a flat charge of 50 cents for any article in a single volume.
Books and Serial Publications--50 cents for each 50 pages or fraction thereof.

Photoprints: 50 cents for each 10 pages or fraction thereof from any single volume.

All charges are on the basis of cash with order. Only Federal agencies are exempted from this requirement. Payment may be made by cash or by check or money order drawn to the Treasurer of the United States.

A supply of order blanks will be available on request after 15 December 1946.

* * * * * *

(Not Restricted)

Reserve Medical Officers Needed for Combat Air Group Training Course: Reserve Medical Officers will be needed for a two weeks' training course of Navy and Marine combat air groups of the Naval and Marine Air Reserve Training Commands. It is anticipated that the first of these periods will occur in the month of June, 1947. Interested officers below the rank of Captain are invited to communicate with the Staff Medical Officer of CNAResTra, NAS, Glenview, Ill., stating geographic area where duty is desired, and the date which will be most convenient to attend. (Personnel Div., BuMed)

* * * * * *

(Not Restricted)

Class of Dental Officers for Basic Course of Instruction Convened: A class of dental officers who recently were commissioned in the Regular Navy was convened on 2 December 1946 at the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland, for the Basic Indoctrination Course of Instruction. The following dental officers constitute the class:

Lieutenant Donald J. Miller, DC, USN
Lieutenant Raymond O. Nickell, DC, USN
Lieutenant Harry C. Pund, Jr., DC, USN
Lieutenant (jg) Edwin T. Ziolkowski, DC, USN
Lieutenant (jg) John W. Lieuallen, Jr., DC, USN
Lieutenant (jg) Glen H. McGee, DC, USN
Lieutenant (jg) Henry E. Naylon, DC, USN
Lieutenant (jg) Charles E. Kailer, DC, USN
Lieutenant (jg) Richard T. Blackwell, DC, USN

(Dental Div., Bu'ed)

* * * * * *

(Not Restricted)

Postgraduate Instruction for Dental Officers: The U. S. Naval Dental School announces that the following postgraduate courses for dental officers will start on 31 March 1947:

Name of Course	Number of Members in Class	Duration of Course
General postgraduate course	10	6 mos.
Specialized postgraduate course in oral surgery	3	6 mos.
Specialized postgraduate course in prosthodontia	4	6 mos.
Specialized postgraduate course in maxillo-facial ocular prosthesis	2	6 mos.

All dental officers on active duty are eligible for these courses, and the officers selected will be from among those who submit requests for this instruction. It is necessary that such requests be submitted in accordance with paragraph 1361, Manual of the Medical Department 1945.

(Not Restricted)

For all officers who successfully complete these courses, a notation to that effect will be made in their service records. (Dental Div., BuMed)

* * * * * *

(Not Restricted)

Re-establishment of Eligibility for Transfer to USN: The Chief of Naval Personnel has recently authorized the recall of Reserve medical and dental officers to active duty for the purpose of re-establishing eligibility for transfer to the regular Navy, provided such officers are desirous of and volunteer for recall. This authority makes now possible a circumvention of the deadline established for the submission of application by medical and dental officers of the U.S. Naval Reserve wherein they were deprived of eligibility to apply after six months from date of expiration of terminal leave.

All medical and dental officers of the U.S. Naval Reserve on inactive duty affected by the foregoing are urged to communicate at the earliest practicable date with the Bureau of Medicine and Surgery in connection with recall to an active duty status and filing of application for appointment to the Medical Corps of the regular Navy. (M.D. Willcutts, BuMed Assistant Chief for Professional and Personnel Operations.)

* * * * * *

(Not Restricted)

Change in Manual of Medical Department regarding Dental Prosthetic Treatment: See Circular Letter 46-176, p. 32.

* * * * * *

ALNAV 617 10 December 1946 (Not Restricted)

Subj: Late Acceptances of Appointments for Transfer to USN.

This Alnav refers to the transfer of Reserve and Temporary USN Officers to the Regular Navy under Public Law Number 347. Reference Alnavs 468 and 572. Due to changes in addresses, mail delays, and other reasons many officers are not receiving notice of their appointment until after the time limit allowed for acceptance has expired. When any officer applies for his appointment after the time limit has expired, a full statement should be obtained and the case referred to the Bureau of Personnel, attention Pers 321A for decision.

--SecNav. James Forrestal.

* * * * * *

ALNAV 579 31 October 1946 (Not Restricted)

Subj: Transportation and Burial of Remains.

Refer Alnav (46-372 and BuMed Circular Letter 46-148 (N. D. Bul. 15 Oct. 1946, 46-2010). Intent Alnav 46-372 apparently being misconstrued. Every effort shall be made to return to United States remains all current deaths Navy and Marine Corps. Dispatch reports of deaths shall include statement "remains will be returned United States by FAGTrans" followed by dispatch to BuMed or MarCorps giving name of vessel, port of entry, and expected date of arrival. If return remains impossible, give reason therefor by dispatch.

--SecNav. James Forrestal

* * * * * *

Circular Letter 46-173 29 November 1946 (Not Restricted)

To: All Ships and Stations JOINT PILOT LETTER

Subj: Shipboard Control of Insect Pests and Rodents.

Ref: (a) BuShips Manual, Chapter 9, Art. 9-201 and Chapter 36, Art. 36-21 to 36-24 inclusive.

1. The provisions of reference (a) are superseded, effective upon receipt of this letter. Instructions herein will be followed pending promulgation of revisions to Chapters 9 and 36 of the Bureau of Ships Manual.

2. Use of Standard Stock Catalog materials as indicated below is recommended as the most direct, cheapest, simplest and usually most effective means for control of insects:

INSECTICIDE STOCK NUMBER	METHOD OF USE	TYPE OF INFESTATION
Aerosol 51-C-2031-10 51-C-2031-25	Gas in enclosed space	Mosquitoes in holds and compartments (In particular when ship leaves a malarious area).

INSECTICIDE STOCK NUMBER	METHOD OF USE	(Not Restricted) TYPE OF INFESTATION
Concentrate DDT Solution 51-I-(NEW) (BuShips Spec. 51-I-19)	Sprayed as a 5% aqueous emulsion (one-half pint per mattress and bunk)	Bedbugs.
	Sprayed on potential breeding sites, such as lifeboats.	Mosquito larvae.
Insecticide Powder (10% DDT) 51-I-157-600 51-I-157-610	Dusted on or blown as dust into runways and hiding places.	Cockroaches, water beetles, ants, lice fleas, and silver fish*.
Roach Exterminator Powder (Type A) 51-E-568 51-E-569	Dusted on runways and hiding places.	Cockroaches around messrooms, galleys and storerooms.
Roach Exterminator Tablets, Type B 51-E-571 51-E-572	Deposited in infested areas.	Cockroaches in file cabinets, desks, and shelves where use of powder is undesirable.

3. Fumigation solely for the control of insects shall be undertaken only for the eradication of moths, weevils, or beetles in dry food stores where other means of control are not practicable. Infested dry foodstuffs should preferably be returned to supply activities ashore for fumigation by specialists, if such facilities are available and it appears economically feasible to do so. If beyond salvage, infested foodstuffs should be surveyed in accordance with Navy Regulations.

4. Hydrocyanic acid gas fumigation is most effective for rodent control, but because of its extreme toxicity such gas may be used only by experienced personnel. Even under trained supervision, its use ordinarily requires abandonment of the ship for a period. Hydrocyanic acid gas fumigation, to be conducted by the U. S. Public Health Service, is authorized under either of the following conditions:

* Storerooms that are insect infested should be thoroughly cleaned when emptied and sprayed throughout with the 5% DDT aqueous emulsion.

(Not Restricted)

(a) Where the rules of the Public Health Service require cyanide fumigation before the ship docks at a United States port.
(b) Where, in the opinion of the Commanding Officer, the rodent population of the ship may not reasonably be exterminated by trapping, and the facilities and personnel of the U. S. Public Health Service are available to conduct such fumigation.

The cost of the materials used by the Public Health Service for fumigating Naval vessels will be borne by the Navy Department. Upon completion of the vessel's fumigation, the appropriate local Public Health Service representative shall be furnished written certification thereof by the commanding officer of the vessel. This certificate is required to substantiate application to be submitted by the Public Health Service to the Navy Department on Standard Form 1080 for reimbursement for cost of materials used. Payment will be made by the Bureau of Supplies and Accounts as a charge against appropriation Maintenance, Bureau of Ships, and the appropriate expenditure account in the 13000 series, except that, for fumigation of naval reserve vessels during the fiscal year 1947, appropriation Naval Reserve will be charged.

5. Carboxide gas (furnished in non-shatterable cylinders under Standard Stock Catalog Numbers 51-C-2069-80 and 51-C-2069-90) is the only fumigant authorized for shipboard use by Naval personnel. When used in the prescribed concentration, with the ship properly sealed, it is an effective insecticide and rodenticide. It is of such low toxicity that it may be used by Naval personnel without undue hazard, without interfering with the scheduled operation of the ship, and with a minimum of interference with the ship's routine. Fumigation of a ship in the Active or Reserve Fleets by carboxide gas is authorized under either of the following conditions:

(a) Where, in the opinion of the Commanding Officer, deratization is urgently needed in ports where U. S. Public Health Service facilities and personnel are not available for conducting hydrocyanic acid gas fumigation.
(b) Where required for control of insects in foodstuffs, as outlined in paragraph 3 above.

6. Ships of the inactive fleet and ships being prepared for inactivation will not be fumigated as a routine measure. Ships scheduled for inactivation which are considered to have rat infestation serious enough to warrant fumigation will be fumigated with hydrocyanic acid gas under the supervision of the U. S. Public Health Service as soon as practicable after such infestation is determined and prior to inactivation.

7. Where insect infestation is apparent in a ship being readied for inactivation, the measures tabulated in paragraph 2 above, will be employed just

(Not Restricted)

prior to starting dehumidification machinery, but before the vessel's ventilating system is secured for preservation. Infested storerooms, in particular, will be treated as described in the footnote to the tabulation.

8. Ships which have already been inactivated without fumigation, or which may be inactivated with only the measures herein described should be examined, at the time of periodic inspections for other reasons, for evidence of rat or cockroach activity. Applications of DDT should suffice to stop any minor cockroach activity. Trained rodent control personnel from the Bureau of Medicine and Surgery may safely set out a few ounces of poisoned water in rat-infested compartments to exterminate small rodent populations. Where material damage by rats and insects is so extensive that fumigation is indicated, the ship shall be fumigated with hydrocyanic acid gas under the supervision of the U. S. Public Health Service if personnel and facilities are available. Otherwise, carboxide gas fumigation may be employed. Whatever the fumigant used, the dehumidification machine shall be blanked off and desiccans shall be removed to avoid contamination of the desiccant by the fumigant.

9. In the event an inactivated ship is fumigated under the conditions of paragraph 8 above, the ship's ventilation system shall be used as necessary to clear the ship of fumigant gases.

--BuShips. S. S. Kennedy --BuMed. W.J.C. Agnew

* * * * * *

Circular Letter 46-174 2 December 1946 (Not Restricted)

To: MedOfsCom, NavHosps (Continental).

Subj: MarCorps Officers on hospital census, information concerning.

This letter from the Chief of BuMed requested certain information relative to the medical status of regular and Reserve officers of the Marine Corps who are carried on the hospital census on 15 December 1946.

* * * * * *

Circular Letter 46-175 4 December 1946 (Not Restricted)

To: All Naval Hospitals and Hospital Ships.

Subj: Personnel retained on active duty with orders reading "Appropriation Chargeable Naval Reserve", reporting of subsistence of.

(Not Restricted)

Refs: (a) BuCir Ltr 44-91, dtd 22 May 1944, BuMed Bulletin of Circular Letters, 1945 Edition.
(b) Naval Reserve Multiple Address Letter No. 40-46 of 31 October 1946.

This letter, signed by the Deputy and Assistant Chief of BuMed, directs that, effective immediately, when Naval Reserve personnel, in the categories specified, are reported on the applicable line on the Monthly Ration Record, NavMed HF-36, an analysis of each such line shall be made on the reverse of the Monthly Ration Record, indicating separately the data applicable to those Naval Reserve Personnel who are being paid from the appropriation "Pay and Subsistence Naval Personnel" and those personnel who are being paid from the appropriation "Naval Reserve", as indicated in either their service records and/or pay accounts.

* * * * * *

Circular Letter 46-176 12 December 1946 (Not Restricted)

To: All Ships and Stations

Subj: Manual of the Medical Department, par. 1329.1; Advance change in.

1. The Manual of the Medical Department is modified as follows:

Delete paragraph 1329.1 and substitute the following:

> **1329.1. Activities which have authorized dental prosthetic facilities may furnish, without prior approval from the Bureau of Medicine and Surgery, dental prosthetic treatment to all personnel of the Navy and Marine Corps on active duty or who are retired with pay, to all personnel authorized by current directives, when such treatment is deemed by the dental officer to be necessary for the promotion of physical fitness, and is in accordance with existing regulations or instructions. However, dental prosthetic treatment shall not be undertaken for retired personnel when it will unduly delay dental prosthetic, or other dental treatment for personnel on active duty.**

--Bumed. C. A. Swanson

* * * * * *